

Claims:

1. A method of tensioning a portion of a polishing pad within a processing area comprising the step of:

5 providing a polishing pad having a portion disposed within a processing area, one end attached to a supply spool, and another end attached to a receive spool.

locking one of the supply spool and the receive spool, such that movement of the corresponding end of the polishing pad will not occur; and

10 tensioning the corresponding other end of the polishing pad from the other of the supply spool and the receive spool using a tensioning mechanism so that bi-linear movement of the portion of the polishing pad within the processing area using another drive mechanism occurs while the polishing pad is tensioned by the tensioning mechanism.

15 2. The method according to claim 1 wherein:

the step of locking locks the supply spool;

the step of tensioning tensions from the receive spool; and

20 further including the step of incrementally moving the polishing pad so that another portion is disposed within the processing area, the step of incrementally moving using the tensioning mechanism to incrementally move the polishing pad.

3. The method according to claim 2 wherein the step of incrementally moving includes the steps of:

25 eliminating tension from the receive spool;

unlocking the supply spool; and

incrementally moving the polishing pad using the tensioning mechanism while the supply spool is unlocked.

30 4. The method according to claim 2 wherein the step of tensioning includes the steps of:

continuously monitoring the tension applied to the polishing pad; and

continuously adjusting the tension based upon the continuously monitored tension.

5 5. The method according to claim 4 wherein the step of continuously monitoring the tension monitors a current supplied to a motor that is used in the step of tensioning.

6. The method according to claim 4 wherein the step of tensioning uses the motor to tension to the receive spool and to incrementally move the polishing pad.

10 7. The method according to claim 6 wherein the step of providing further provides a plurality of rollers disposed on a slide member and another plurality of rollers.

15 8. The method according to claim 7 wherein the step of providing provides a pad path in which only a back surface of the polishing pad will physically contact the plurality of rollers and the another plurality of rollers.

9. The method according to claim 1 wherein the step of tensioning uses the motor to tension to the receive spool and to incrementally move the polishing pad.

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10. The method according to claim 1 wherein the step of tensioning tensions an entire portion of the polishing pad disposed between the supply spool and the receive spool.

25 11. The method according to claim 1 wherein the pad path passes over the plurality of rollers and the another plurality of rollers.

12. The method according to claim 1 wherein the step of tensioning includes the steps of:

30 continuously monitoring the tension applied to the polishing pad; and
continuously adjusting the tension based upon the continuously monitored tension.

13. The method according to claim 12 wherein the step of continuously monitoring the tension monitors a current supplied to a motor that is used in the step of tensioning.

5 14. The method according to claim 12 wherein the step of tensioning uses the motor to tension to the receive spool and to incrementally move the polishing pad.

15. An apparatus for tensioning and incrementing a portion of a polishing pad within a processing area used for chemical mechanical polishing of a workpiece using a solution
10 comprising:

a drive assembly that contains a rotatable shaft;

a slide member that is moveable within a slide area, the slide member being mechanically coupled to the drive assembly, such that rotation of the rotatable shaft creates bi-linear movement of the slide member, wherein the polishing pad is disposed
15 through the slide member, such that bi-linear movement of the slide member creates a corresponding bi-linear movement of the portion of the polishing pad; and

a supply spool;

a receive spool;

a plurality of rollers that create a pad path between the supply spool and the
20 receive spool; and

a tensioning mechanism that provides tension to the receive spool, and thereby the portion of the polishing pad, when the portion of the polishing pad is being used to chemically mechanically polishing the workpiece.

25 16. The apparatus according to claim 15 wherein the tensioning mechanism is coupled to the receive spool.

17. The apparatus according to claim 16 further including a locking mechanism coupled to the supply spool.

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18. The apparatus according to claim 17 further including a controller that controls the tension provided by the tensioning mechanism.

5 19. The apparatus according to claim 17 wherein the controller receives a feedback signal that assists in controlling the tension provided by the tensioning mechanism.

20. The apparatus according to claim 17 wherein the tensioning mechanism further provides for incrementing the polishing pad.

10 21. The apparatus according to claim 20 wherein the tensioning mechanism will increment the polishing pad when the locking mechanism unlocks the supply spool.